ABSTRACT

A high capacity microarrayer for spotting solution onto slides in an automated microarray dispensing device. A microplate indexing device automatically moves, in sequence, a plurality of microplates to a solution removal area. A dispense head accesses each microplate at the solution removal area to remove solution from the microplate. The dispense head then moves to a slide positioning station to spot slides at the slide positioning station. In a preferred embodiment of the present invention, the microplate indexing station has at least one input stacking chamber for stacking microplates, and at least one output stacking chamber for stacking microplates. A walking beam indexer is disposed between the at least one input stacking chamber and the at least one output stacking chamber. The walking beam indexer is for moving microplates from said at least one input stacking chamber to said at least one output stacking chamber. While at the solution removal area, a lid lifter lifts the lid off each microplate to permit the microplate to be accessed by the dispense head for solution removal. After the solution is removed, the lid lifter replaces the lid. In another preferred embodiment, there is at least one light source capable of illuminating the slides, and at least one camera operating in conjunction with the at least one light source. The at least one camera is capable of acquiring and transmitting slide image data to a computer. The computer is programmed to receive the slide image and analyze it. The computer will then generate post analysis data based on the analysis of the slide image data. The post analysis data is available for improving the spotting of the solution onto the slides. In a preferred embodiment, the slide image data includes information relating to slide alignment, information relating to spot quality, and slide identification information. In a preferred embodiment, the analysis of the information relating to slide alignment enables the computer to make automatic adjustments to the relative positions of the at least one dispense head and the slides to increase the accuracy of the spotting. In a preferred embodiment, the analysis of the information relating to spot quality identifies a spot as pass or fail. An operator is then able to rework the spot. In a preferred embodiment, the analysis of the slide identification information enables the computer to track each slide.